09/068,528
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     (FILE 'HOME' ENTERED AT 08:22:18 ON 04 SEP 2003)

     INDEX 'ADISCTI, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI,
     BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, CABA,
     CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DDFB,
     DDFU, DGENE, DRUGB, DRUGLAUNCH, DRUGMONOG2, ...' ENTERED AT 08:22:30 ON
     04 SEP 2003
               SEA UDP-GLUCOSE
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             388   FILE AGRICOLA
              21   FILE ANABSTR
              25   FILE AQUASCI
              35   FILE BIOBUSINESS
               1   FILE BIOCOMMERCE
            2839   FILE BIOSIS
             160   FILE BIOTECHABS
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             584   FILE BIOTECHNO
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              85   FILE CANCERLIT
            4177   FILE CAPLUS
              26   FILE CEABA-VTB
               1   FILE CEN
               2   FILE CIN
              22   FILE CONFSCI
               7   FILE CROPB
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             173   FILE DDFB
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               2   FILE KOSMET
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            1186   FILE MEDLINE
               6   FILE NIOSHTIC
               3   FILE NTIS
               6   FILE OCEAN
             686   FILE PASCAL
               1   FILE PHAR
               1   FILE PHIN
               2   FILE PROMT
            1314   FILE SCISEARCH
               1   FILE SYNTHLINE
             694   FILE TOXCENTER
             447   FILE USPATFULL
              11   FILE USPAT2
               1   FILE VETU
              77   FILE WPIDS
              77   FILE WPINDEX
L1             QUE UDP-GLUCOSE
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FILE 'CAPLUS, BIOSIS, SCISEARCH, MEDLINE, EMBASE, TOXCENTER, PASCAL, CABA, BIOTECHNO, ESBIOBASE, LIFESCI, USPATFULL' ENTERED AT 08:23:38 ON 04 SEP 2003

L2 7668 S L1 AND (SYNTHE? OR BIOSYNTHE?)
L3 15 S L2 AND (GLUCOSE-1-PHOSPHATE URIDYLTRANSFERASE)
L4 15 DUP REM L3 (0 DUPLICATES REMOVED)
L5 364 S GDP-GLUCOSE OR GDP-SUGAR
L6 248 S L5 AND (SYNTHE? OR BIOSYNTHE? OR MANUFACTU? OR METHOD OF MAK
L7 8 S L6 AND GUANYLYLTRANSFERASE
L8 8 DUP REM L7 (0 DUPLICATES REMOVED)

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multifunctional and did not have phosphomannose isomerase or phosphoglucose isomerase activity. Also, in contrast to the pig liver enzyme which uses mannose-1-P or glucose-1-P plus GTP to **synthesize** either GDP-mannose or **GDP-glucose**, the mycobacterial enzyme was specific for mannose-1-P as the sugar phosphate substrate. The enzyme was also relatively specific for GTP as the nucleoside triphosphate substrate. ITP was about 18% as effective as GTP, but ATP, CTP, and UTP were inactive. The activity of the enzyme was inhibited by **GDP-glucose** and glucose-1-P, although neither was a substrate for this enzyme. The pH optimum for the enzyme was 8.0, and Mg2+ was the best cation with optimum activity at about 5 mM. This enzyme is important for producing the activated form of mannose for formation of cell wall lipoarabinomannan and various mannose-containing glycolipids and polysaccharides.

L8 ANSWER 5 OF 8 MEDLINE on STN
ACCESSION NUMBER: 93352609 MEDLINE
DOCUMENT NUMBER: 93352609 PubMed ID: 7688733
TITLE: GDP-mannose pyrophosphorylase. Purification to homogeneity, properties, and utilization to prepare photoaffinity analogs.
AUTHOR: Szumilo T; Drake R R; York J L; Elbein A D
CORPORATE SOURCE: Department of Biochemistry and Molecular Biology, University of Arkansas for Medical Sciences, Little Rock 72205-7199.
CONTRACT NUMBER: DK-21800 (NIDDK)
SOURCE: JOURNAL OF BIOLOGICAL CHEMISTRY, (1993 Aug 25) 268 (24) 17943-50.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199309
ENTRY DATE: Entered STN: 19931001
Last Updated on STN: 19960129
Entered Medline: 19930916

Source is not a microorganism

AB Pig liver GDP-mannose pyrophosphorylase was purified 5,000-fold to apparent homogeneity using standard techniques. The native enzyme showed a single band on gels of about 450 kDa and two subunits of 43 and 37 kDa on sodium dodecyl sulfate-polyacrylamide gel electrophoresis. The 37-kDa (beta-) subunit had only methionine at its amino terminus and a surprisingly hydrophobic sequence: Met-Lys-Ala-Leu-Ile-Leu-Val-Gly-Gly-Tyr-Gly-Thr-Arg-Leu- Arg-Pro-Leu-Thr-Leu-Ser-Ile-Pro-Lys. The 43-kDa (alpha-) subunit was blocked at the amino terminus, but a 29-kDa CNBr fragment had the following sequence: Leu-Asp-Ala-His-Arg-His-Arg-Pro-His-Pro-Phe-Leu-Leu-. Substrate specificity studies done in the direction of formation of nucleoside triphosphate and sugar-1-P indicated that the enzyme was most effective with **GDP-glucose** as substrate (100%) followed by IDP-mannose (72%) and then GDP-mannose (61%). That GDP-mannose and **GDP-glucose** activities were indeed catalyzed by the same enzyme was indicated by the following. (i) Various studies indicated that the enzyme was homogeneous. (ii) A staining procedure for production of GTP stained the same single band on native gels when either GDP-mannose or **GDP-glucose** was the substrate. (iii). GDP-mannose inhibited the utilization of **GDP-glucose** by the enzyme, and vice versa. When 8-azido-[32P]GTP was incubated with native enzyme and exposed to UV light, both the 43-kDa and the 37-kDa subunits became labeled, although the 37-kDa subunit reacted more strongly. On the other hand, 8-azido-GDP-[32P]mannose only photolabeled the 43-kDa band. Most importantly, the purified enzyme can be utilized to produce 8-azido-[32P]GDP mannose or 8-azido-[32P] **GDP glucose**.

L8 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 1968:416342 CAPLUS
DOCUMENT NUMBER: 69:16342
TITLE: The purification and properties of guanosine diphosphate glucose pyrophosphorylase of pea seedlings
AUTHOR(S): Peaud-Lenoel, C.; Axelos, M.
CORPORATE SOURCE: Lab. Photosyn., C.N.R.S., Gif-sur-Yvette, Fr.
SOURCE: European Journal of Biochemistry (1968), 4(4), 561-7
CODEN: EJBCAI; ISSN: 0014-2956
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A 400-fold purification of **GDP glucose** pyrophosphorylase from pea seedlings concomitant with stabilization of enzyme activity was accomplished by (NH4)2SO4 fractionation, followed by chromatog. on Sephadex G-200 and DEAE-cellulose columns. In this last step, the enzyme is eluted with 0.20M NaCl. The enzyme is specifically activated by Mn2+. The apparent Km value for glucose 1-phosphate (37.degree., pH 7.5) is about 3 .times. 10-4M. The **GDP-glucose biosynthesis** is reversible, with the equil. in favor of pyrophosphorolysis. The purified enzyme is not active with GTP plus mannose 1-phosphate or galactose 1-phosphate. No formation of nucleotide sugar is observed in the presence of glucose 1-phosphate plus ATP, ITP, dTTP, or CTP.

L8 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 1967:451963 CAPLUS
DOCUMENT NUMBER: 67:51963
TITLE: Nucleoside diphosphate glucose pyrophosphorylases in mast cell tumors
AUTHOR(S): Danishefsky, Isidore; Heritier-Watkins, O.
CORPORATE SOURCE: New York Med. Coll., New York, NY, USA
SOURCE: Biochimica et Biophysica Acta (1967), 139(2), 349-57
CODEN: BBACAQ; ISSN: 0006-3002
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Mast cell tumors were shown to contain UDP-glucose pyrophosphorylase (UTP:.alpha.-D-glucose-I-phosphate uridylyltransferase EC2.7.7.9) and **GDP-glucose** pyrophosphorylase (GTP:.alpha. - D - glucose - I - phosphate **guanylyltransferase**). The 2 activities were sepd. from each other by (NH4)2SO4 fractionation and are thus distinct enzymes. The **GDP-glucose** pyrophosphorylase fraction was purified further on DEAE-cellulose and some of its properties were studied. The enzyme was shown to catalyze the **synthesis** of **GDP-glucose** from D-glucose-I-phosphate and GTP. Other nucleoside triphosphates did not yield nucleoside diphosphate glucose when incubated with this enzyme prepn. The enzyme also catalyzed, to a lesser degree, the formation of GDP-mannose from GTP and D-mannose I-phosphate. Mannose I-phosphate also had an inhibitory effect on the **synthesis** of **GDP-glucose**. Fibrosarcomas and umbilical cord do not contain any detectable amt. of **GDP-glucose** pyrophosphorylase although they do have UDP-glucose pyrophosphorylase activity. 32 references.

L8 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 1968:435 CAPLUS
DOCUMENT NUMBER: 68:435
TITLE: **GDP-glucose** pyrophosphorylase from peas
AUTHOR(S): Barber, George A.
CORPORATE SOURCE: Univ. of Hawaii, Honolulu, HI, USA
SOURCE: Methods in Enzymology (1966), 8, 266-8
CODEN: MENZAU; ISSN: 0076-6879
DOCUMENT TYPE: Journal

LANGUAGE: English

AB **GDP-glucose** pyrophosphorylase from peas catalyzes the reaction GTP + glucose 1-phosphate to **GDP-glucose** + inorg. pyrophosphate. An assay method is described. The principle of the assay is the estn. of GDP-D-glucose-14C formed by adding 14C-labeled .alpha.-D-glucose 1-phosphate to the reaction mixt. The sugar nucleotide is isolated from the mixt. by adsorption on charcoal. The prepn. of the enzyme from fresh peas is described. The peas were homogenized and homogenate passed through cheesecloth and centrifuged at 20,000 g. The supernatant was made 0.5M in MnCl2. The ppt. was discarded. The ext. was pptd. at pH 7.0 by 30-40% satn. with (NH4)2SO4. The enzyme prepn. catalyzes the **synthesis** of D-glucosyl nucleotides and D-glucosyls of ADP, GDP, CDP, UDP, dTDP, IDP, and dUDP. The enzyme cannot use .beta.-D-glucose 1-phosphate, .alpha.-D-galactose 1-phosphate, .beta.-D-galactose 1-phosphate, or .alpha.-D-xylose 1-phosphate. The formation of GDP-D-glucose was stimulated about 3-fold by 5mM MnCl2 and about 1.5-fold by 5mM MgCl2. Exts. of etiolated pea, mung bean seedlings, leaves of spinach, buckwheat, mustard, or parsley catalyze the **synthesis** of GDP-D-glucose from GTP and .alpha.-D-glucose 1-phosphate.

L5 ANSWER 511 OF 512 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 1965:45275 CAPLUS
DOCUMENT NUMBER: 62:45275
ORIGINAL REFERENCE NO.: 62:8069a-d
TITLE: The activation of Escherichia **coli** ADP-glucose **pyrophosphorylase**
AUTHOR(S): Preiss, , Jack; Shen, Laura; Partridge, Marian
CORPORATE SOURCE: Univ. of California, Davis
SOURCE: Biochemical and Biophysical Research Communications (1965), 18(2), 180-5
CODEN: BBRCA9; ISSN: 0006-291X
DOCUMENT TYPE: Journal
LANGUAGE: English

AB E. **coli** B was grown in a **synthetic**, N-limiting medium at 37.degree. with glucose. Harvested cells were suspended in 4 vols. of 0.05M Tris-HCl buffer (pH 7.9), contg. 0.005M reduced glutathione. The cells were disrupted in a French press at 20,000 psi., and then centrifuged at 30,000 g for 15 min., the supernatant being used to supply **pyrophosphorylase**. ADP-glucose **pyrophosphorylase** (I) was purified 44-fold by protamine sulfate pptn., (NH4)2SO4 fractionation, and heat treatment at 65.degree.. Phosphoglucomutase, aldolase, and **UDP-glucose pyrophosphorylase** were found in the crude supernatant,but were not found after purification. Enzyme activity was detd. from the **synthesis** of radio-ATP from ADP-glucose and inorg. pyrophosphate-32P (32PPi). Nucleoside triphosphate was sepd. from 32PPi by the use of Norit. I was stimulated 50-fold by fructose 1,6-diphosphate (II), whereas with phosphoenolpyruvate (III) or glyceraldehyde 3-phosphate(IV) it was stimulated 20-fold. Detn. of the II-concn. in the reaction mixt. with aldolase, triose phosphate dehydrogenase, DPN, and arsenate showed that its concn. did not change during the formation of ADP-glucose from ATP and glucose 1-phosphate. Of the tested compds., II, III, and IV demonstrated the best activation. Fructose 6-phosphate and pyruvate, which activated I from Arthrobacter, did not activate I from E. **coli**. 2,3-Diphosphoglycerate, glucose 6-phosphate, glucose, fructose 1-phosphate, NaHCO3, and succinate did not activate the enzyme. II did not activate **UDP-glucose**, TDP-glucose, and GDP-mannose **pyrophosphorylases** from the 30,000 g supernatant. I from Aerobacter aerogenes was activated by II, III, and IV. I from Rhodo-spirillum rubrum or Agrobacterium tumefaciens was activated by fructose 6-phosphate, pyruvate, and ribose 5-phosphate. Therefore, on the basis of activation, 2 types of I were distinguished.

L5 ANSWER 502 OF 512 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 1972:69790 CAPLUS
DOCUMENT NUMBER: 76:69790
TITLE: Activity of nucleoside diphosphate sugar **synthetase** (**pyrophosphorylases**) in cells of Escherichia **coli** and Shigella flexneri
AUTHOR(S): Janczura, Ewa; Chojnacki, Tadeusz
CORPORATE SOURCE: Zakl. Bakteriol., Panstw. Zakl. Hig., Warsaw, Pol.
SOURCE: Medycyna Doswiadczalna i Mikrobiologia (1971), 23(4), 297-302
CODEN: MDMIAZ; ISSN: 0025-8601
DOCUMENT TYPE: Journal
LANGUAGE: Polish
AB Activities of the title enzymes were detd. in cell-free exts. of E. **coli** HfrC and in 8 strains of S. flexneri using 32P-labeled glucose 1-phosphate and the appropriate nucleoside 5'-triphosphates. In S. flexneri only TDP-glucose was **synthesized**; the amt. of the nucleoside diphosphate sugar was twice as high in avirulent as in virulent strains. In E. **coli** exts., ADP, CDP, GDP, TDP, and IDP (but not **UDP**) **glucose** were **synthesiz**

L4 ANSWER 13 OF 15 EMBASE COPYRIGHT 2003 ELSEVIER SCI. B.V. on STN
ACCESSION NUMBER: 75104635 EMBASE
DOCUMENT NUMBER: 1975104635
TITLE: [**Biosynthesis** of **UDP glucose** by rat liver microsomes]. **BIOSYNTHESE** DE L'UDPGLUCOSE PAR LES MICROSOMES DES HEPATOCYTES DE RAT.
AUTHOR: Berthillier G.; Got R.
CORPORATE SOURCE: No 66 Lab. Biochim. Membranes, ERCNRS, Villeurbanne, France
SOURCE: Biochimica et Biophysica Acta, (1974) 362/2 (390-402). CODEN: BBACAQ
DOCUMENT TYPE: Journal
FILE SEGMENT: 029 Clinical Biochemistry
023 Nuclear Medicine
LANGUAGE: French
AB Evidence is presented to show that all enzymes and all intermediary metabolites of a UDPglucose **biosynthesis** pathway are present in the microsomal membranes of rat liver. Glucose 6 phosphate, glucose 1 phosphate and UDPglucose are characterized by chromatography. The properties of phosphoglucomutase and UTP : D **Glucose 1 phosphate uridyltransferase** are studied. The K(m) values of phosphoglucomutase at pH 7.2 and 42.degree.C were 0.26 x 10-3 mM for glucose 1,6 diphosphate and 80 x 10-3 mM for glucose 1 phosphate. The K(m) values of UTP : D glucose 1 phosphate uridyl uridyltransferase at pH 8.5 and 37.degree.C were 220 x 10-3 mM for UTP and 166 x 10-3 mM for glucose 1 phosphate. These values are compared to the given values for enzymes from different species, and to those found for soluble enzymes. The significance of this membranous pathway is discussed.

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L8 ANSWER 1 OF 8 USPATFULL on STN
ACCESSION NUMBER: 2003:79307 USPATFULL
TITLE: Active-site engineering of nucleotidylyltransferases and general enzymatic methods for the **synthesis** of natural and "unnatural" UDP- and TDP-nucleotide sugars
INVENTOR(S): Thorson, Jon, Madison, NY, UNITED STATES
Nikilov, Dimitar B., New York, NY, UNITED STATES

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2003055235	A1	20030320	
APPLICATION INFO.:	US 2001-13542	A1	20011213	(10)

	NUMBER	DATE	
PRIORITY INFORMATION:	US 2000-254927P	20001213	(60)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: KENYON & KENYON, 1500 K STREET, N.W., SUITE 700, WASHINGTON, DC, 20005
NUMBER OF CLAIMS: 54
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 32 Drawing Page(s)
LINE COUNT: 3332
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention provides mutant nucleotidylyl-transferases, such as E.sub.p, having altered substrate specificity; methods for their production; and methods of producing nucleotide sugars, which utilize these nucleotidylyl-transferases. The present invention also provides methods of **synthesizing** desired nucleotide sugars using natural and/or modified Ep or other nucleotidyltransferases; and nucleotide sugars sythesized by the present methods. The present invention further provides new glycosyl phosphates, and **methods** for **making** them.

L8 ANSWER 2 OF 8 USPATFULL on STN
ACCESSION NUMBER: 2002:272847 USPATFULL
TITLE: Glycoconjugate and sugar nucleotide **synthesis** using solid supports
INVENTOR(S): Wang, Peng G., Troy, MI, UNITED STATES
Chen, Xi, Norristown, PA, UNITED STATES

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2002150968	A1	20021017	
APPLICATION INFO.:	US 2001-757846	A1	20010110	(9)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: Brinks Hofer Gilson & Lione, P.O. Box 10395, Chicago, IL, 60610
NUMBER OF CLAIMS: 43
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 22 Drawing Page(s)
LINE COUNT: 2405
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention relates to methods and compositions for the in vitro production of glycoconjugates. In particular, a preferred production system is provided that comprises a solid support, at least one sugar nucleotide producing enzyme, at least one glycosyltransferase, at least one bioenergetic, and at least one acceptor. The sugar nucleotide producing enzyme(s) is preferably immobilized on the solid support. The

glycosyltransferase may be co-immobilized on the solid support with the sugar nucleotide producing enzyme(s), or may be provided to the solid support in solution.

L8 ANSWER 3 OF 8 USPATFULL on STN
ACCESSION NUMBER: 2002:243134 USPATFULL
TITLE: Glycoconjugate **synthesis** using a pathway-engineered organism
INVENTOR(S): Wang, Peng George, Troy, MI, UNITED STATES
Chen, Xi, Norristown, PA, UNITED STATES
Liu, Ziye, Detroit, MI, UNITED STATES
Zhang, Wei, Detroit, MI, UNITED STATES

	NUMBER	KIND	DATE	
PATENT INFORMATION:	US 2002132320	A1	20020919	
APPLICATION INFO.:	US 2001-758525	A1	20010110	(9)

DOCUMENT TYPE: Utility
FILE SEGMENT: APPLICATION
LEGAL REPRESENTATIVE: BRINKS HOFER GILSON & LIONE, P.O. BOX 10395, CHICAGO, IL, 60610
NUMBER OF CLAIMS: 51
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 22 Drawing Page(s)
LINE COUNT: 2558
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB This invention relates to methods and compositions for the production of glycoconjugates. In particular, organisms are provided with at least one heterologous gene encoding an enzyme for regenerating a sugar nucleotide along with at least one glycosyltransterase. Such organisms are useful for the large-scale **synthesis** of glycoconjugates.

L8 ANSWER 4 OF 8 MEDLINE on STN
ACCESSION NUMBER: 1999145457 MEDLINE
DOCUMENT NUMBER: 99145457 PubMed ID: 9989944
TITLE: Purification and properties of mycobacterial GDP-mannose pyrophosphorylase.
AUTHOR: Ning B; Elbein A D
CORPORATE SOURCE: Department of Biochemistry and Molecular Biology, University of Arkansas for Medical Sciences, Little Rock, Arkansas, 72205, USA.
CONTRACT NUMBER: R03-AI43292 (NIAID)
SOURCE: ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS, (1999 Feb 15) 362 (2) 339-45.
Journal code: 0372430. ISSN: 0003-9861.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199903
ENTRY DATE: Entered STN: 19990324
Last Updated on STN: 19990324
Entered Medline: 19990311

post dated

AB The enzyme that catalyzes the formation of GDP-d-mannose from GTP and alpha-d-mannose-1-P was purified about 2300-fold to near homogeneity from the soluble fraction of Mycobacterium smegmatis. At the final stage of purification, a major protein band of 37 kDa was observed and this band was specifically labeled, and in a concentration-dependent manner, by the photoaffinity probe 8-N3-GDP[32P]-d-mannose. The purified enzyme was stable for several months when kept in the frozen state. The 37-kDa band was subjected to protein sequencing and one peptide sequence of 25 amino acids showed over 80% identity to GDP-mannose pyrophosphorylases of pig liver and Saccharomyces cerevesiae. In contrast to some other bacterial GDP-mannose pyrophosphorylases, the mycobacterial enzyme was not